EnviroAtlas Interactive Map Basic Navigation

Contents

EnviroAtlas Interactive Map Basic Navigation

About EnviroAtlas

EnviroAtlas is a collection of tools and resources to provide data, research, and analysis on the relationships between nature, people, health, and the economy.

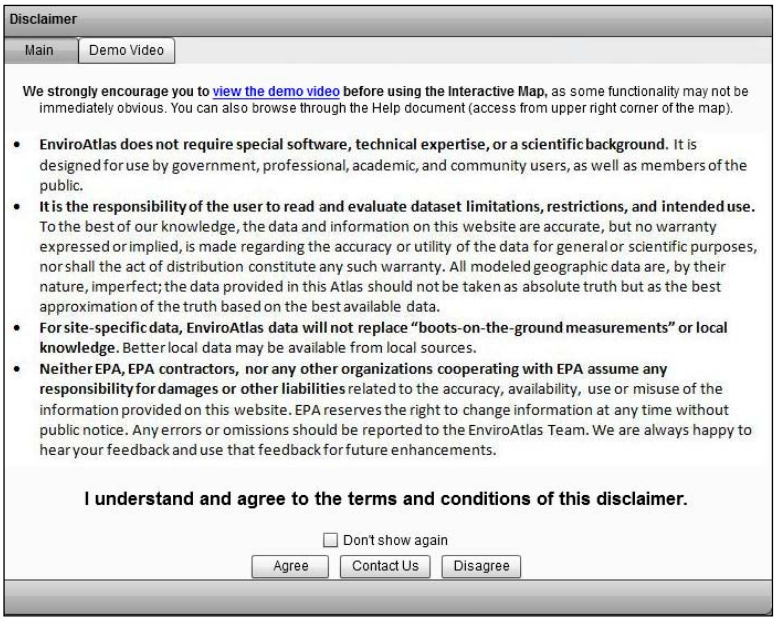
EnviroAtlas is designed for use by government, professional, academic, and community users as well as members of the public with an interest in ecosystem services, clean air, water resources, hazard mitigation, recreation, wildlife, conservation, climate, transportation, land use, health, and sustainable and healthy communities.

The EnviroAtlas interactive map displays spatial data layers grouped by category at the national level and for select communities. These data layers depict environmental metrics calculated or modeled by EPA and its partners, and may be referred to as “metrics” or "layers" in EnviroAtlas documentation. Map layer exploration is facilitated by the navigation toolbar (for zooming in and out, panning, and re-centering the map), bookmarks to commonly used locations, feature identification, and a locator (overview) map.

For additional information about EnviroAtlas, please see the the EnviroAtlas home page.

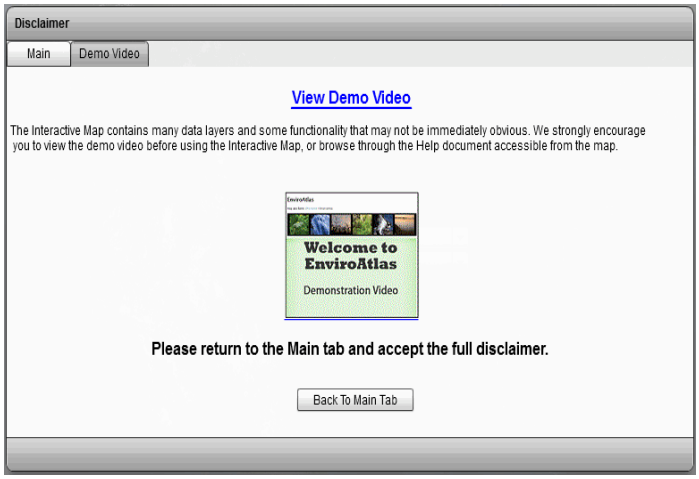
Interactive Map Disclaimer

The EnviroAtlas interactive map initially opens with an EnviroAtlas use disclaimer. After several seconds the disclaimer pop-up window provides a button to agree to the terms and conditions of the disclaimer. This disclaimer pop-up contains two tabs: the **Main** tab with the user agreement, and the **Demo Video** tab which contains a link to the "Welcome to EnviroAtlas" video, explained below. After reading the terms and conditions for use on the **Main** tab, select the **Agree** button to proceed to the map. If desired, check the **Don't show again** box to bypass the disclaimer pop-up on subsequent visits to EnviroAtlas (bypass remains until the browser cookies and history are cleared). The **Contact Us** button opens a separate email window to send to EnviroAtlas (EnviroAltas@epa.gov). Selecting the **Disagree** button opens the EnviroAtlas website.



The disclaimer may be viewed at any time from within the interactive map by clicking the **Mapping Tools** link and selecting **Re-open Intro. Page**.

EnviroAtlas Interactive Map Basic Navigation

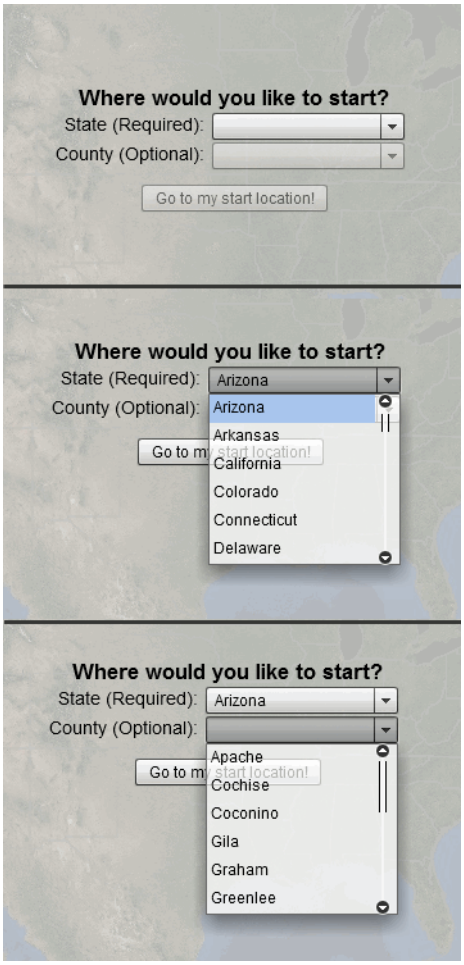


The **Demo Video** tab contains a link to a short video demonstrating some of the functionality within the EnviroAtlas Interactive Map. By clicking the blue "View Demo Video" text link or the "Welcome to EnviroAtlas Demonstration Video" image, the video file opens in a new browser window (browser pop-ups must be enabled). Return to the **Main** tab by selecting the **Back to Main Tab** button and then **Agree** to the terms and conditions of the disclaimer to continue to the EnviroAtlas Interactive Map.

Interactive Map Start Location

Once the disclaimer is accepted, the interactive map offers dropdown menus to select a starting location for the map. Select a state from the **State (Required)** dropdown (currently only the 48 contiguous states are available in the list) and, optionally, a county within the selected state. If no county is selected, the state boundary is used for the selection.

When the selection box is empty, typing in the first letter of a state (or county for the optional county menu) scrolls in the list to that letter. For example, typing "i" in the blank **State (Required)** selection box moves the scroll list to "Idaho" – the first state in the list starting with "i". Once a state is selected, the county list is populated and one county may then be selected. Once the state or state and county have been selected, click the **Go to my start location!** button. The Interactive Map zooms to the selected location. The map automatically displays state and county layers for reference. To turn off these layers, click on **Supplemental Maps** to access the Supplemental Maps table of contents, and uncheck the layers in the Boundaries category.

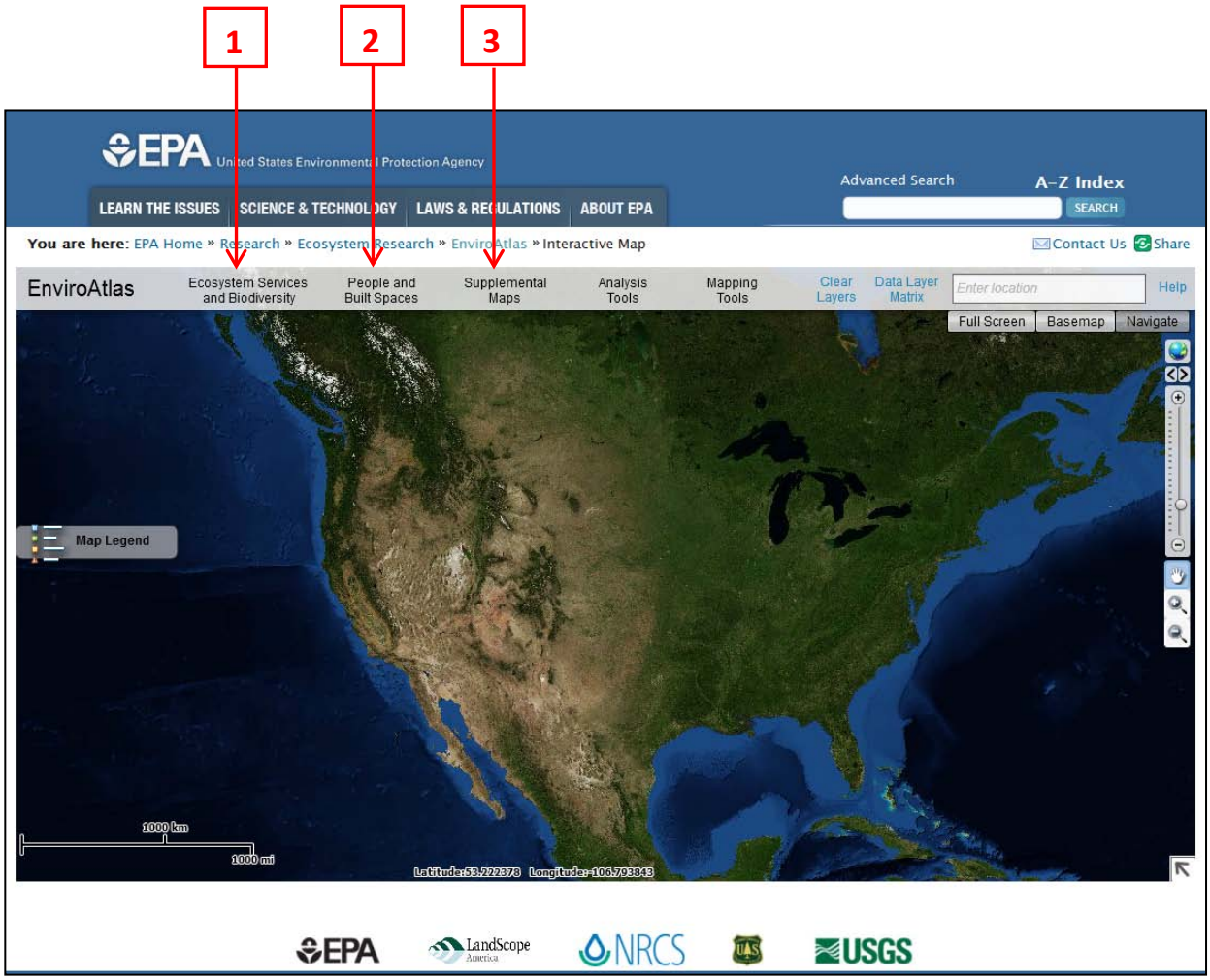


EnviroAtlas Interactive Map Basic Navigation

Interactive Map Functionality

The EnviroAtlas Interactive Map contains links across the top bar which allow for exploration of mapped layers. The links include map visualization capabilities and analysis tools. Upon selection, each link provides a pop-up window with additional functionality.

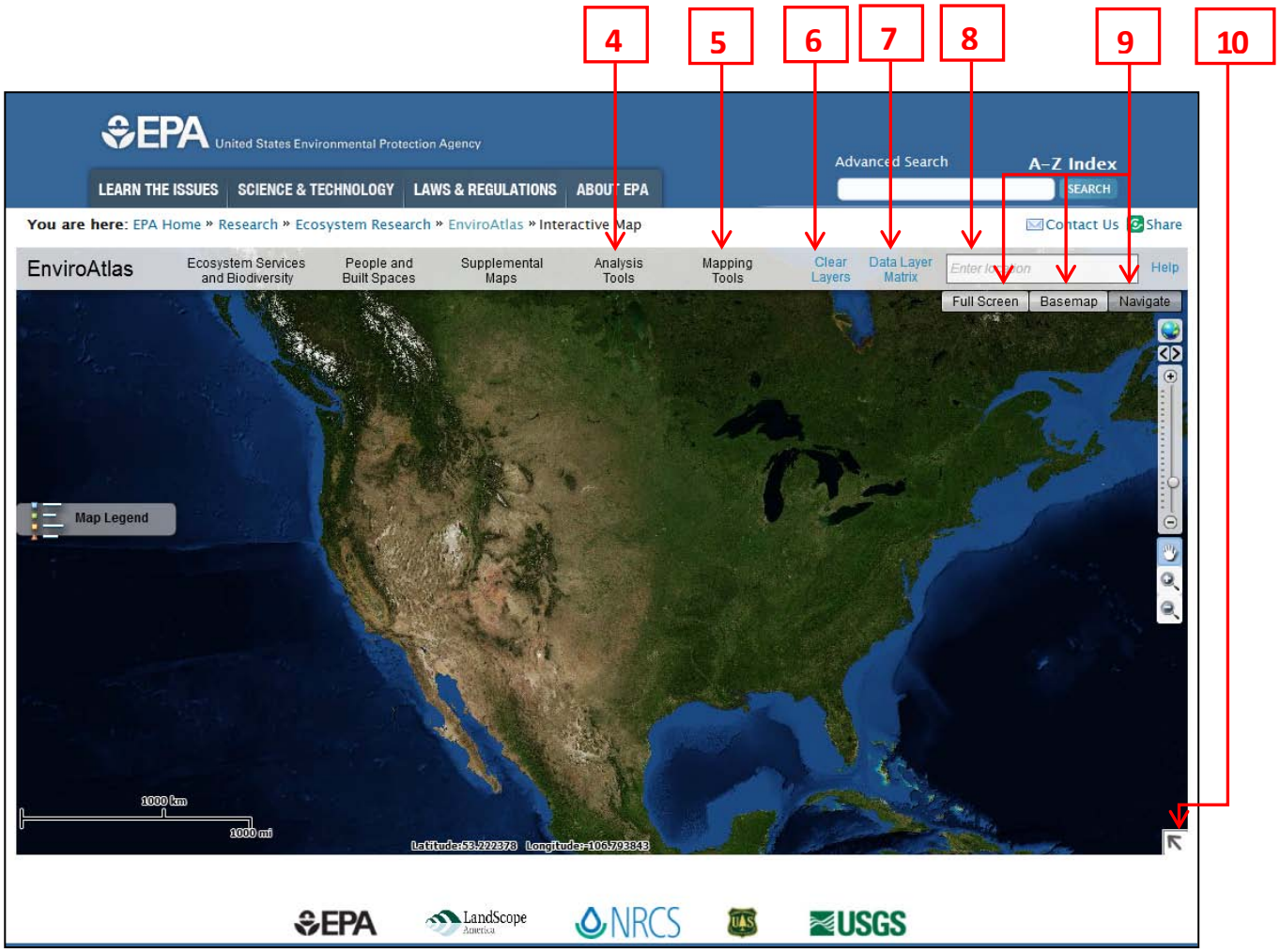
The first two links, "Ecosystem Services" and "People and Built Spaces" allow for the display of mapped layers created specifically for EnviroAtlas. The third link, "Supplemental Maps," contains data incorporated from EnviroAtlas and other sources designed to augment EnviroAtlas layers.



1. Ecosystem Services – provides a selection of Ecosystem Services data at the national level and for select communities.
2. People and Built Spaces – provides a selection of national and community demographic data.
3. Supplemental Maps – provides a selection of a variety of supplemental geographic information from various sources.

Analysis, map navigation, and map display tools comprise the remainder of the links.

EnviroAtlas Interactive Map Basic Navigation



4. Analysis Tools – facilitates geospatial analysis and visualization of EnviroAtlas and related data.
5. Mapping Tools – provides resources for map navigation, draw and measure, display, printing, and EnviroAtlas disclaimer.
6. Clear Layers – removes all layers currently displayed in the map with one mouse click.
7. Data Layer Matrix - link to file displaying all available EnviroAtlas national and community layers.
8. Location Search Box – provides a search tool to find and navigate to an address or location.
9. Full Screen/Basemap/Navigate – provides three additional options for map display and navigation, which are explained in detail in the next section of this document.
10. Overview Map – opens an overview map with an inset box showing the current geographic extent of the main map. Click the arrow to open and close the overview map.

EnviroAtlas Interactive Map Basic Navigation

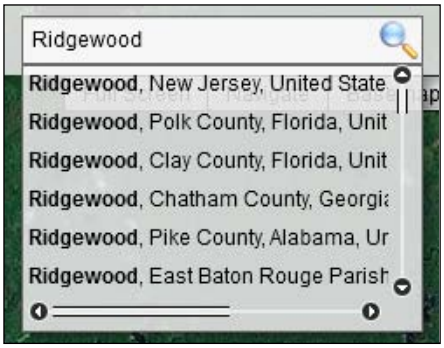
Map Navigation and Display Tools

EnviroAtlas provides multiple methods to navigate within the map, modify the display, and obtain map extent and coordinate information.

Location Search Box

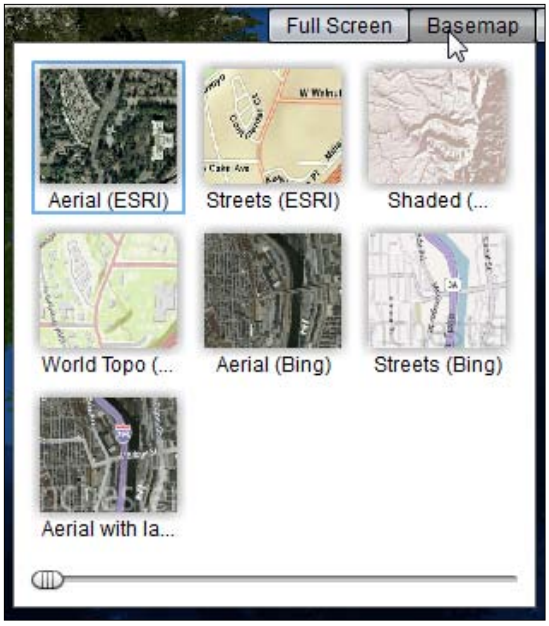
The location search box located in the upper-right corner of the interactive map allows for navigation of the map to a location by entering the place name, street address, city and state, or ZIP Code.

For common place names, several choices are displayed. The scroll bar or scroll arrows are used to find the exact location.



Full Screen/Basemap/Navigate

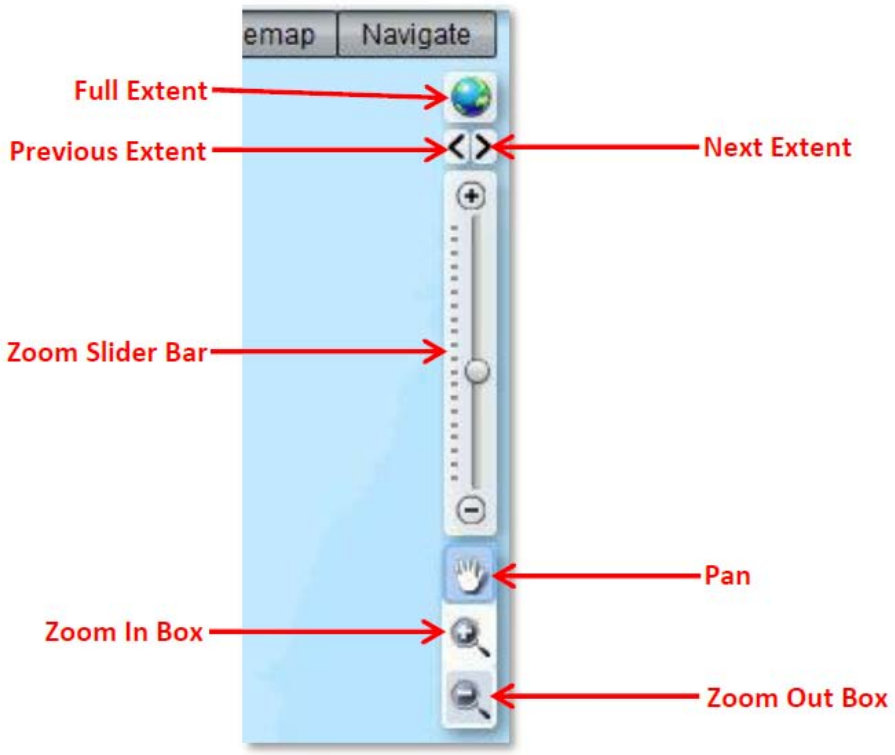
The **Full Screen** button expands the map to the full extent of the computer screen. This is particularly useful when viewing a large geographic area. In Full Screen mode, the EnviroAtlas website borders and browser tools are removed to provide maximum map size on the computer screen. To switch back to regular viewing, press the **Full Screen** button again, or the Escape key on the computer keyboard. **NOTE:** Full Screen mode limits some keyboard functions.



The **Basemap** button offers several options for changing the base map, which is the underlying map image for all EnviroAtlas layers. Different sources of aerial imagery, topographic, and street maps are available. To aid in the discovery of the most suitable base map, the slider bar at the bottom of the pop-up window cycles through options of individual or combined base maps.

EnviroAtlas Interactive Map Basic Navigation

The **Navigate** button displays navigation tools directly on the interactive map. These tools provide most navigation functions in a convenient, compact group.

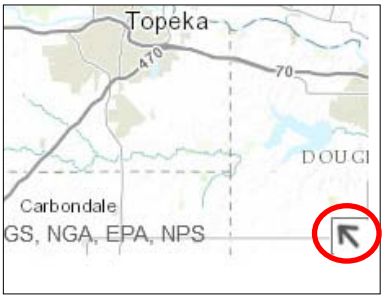


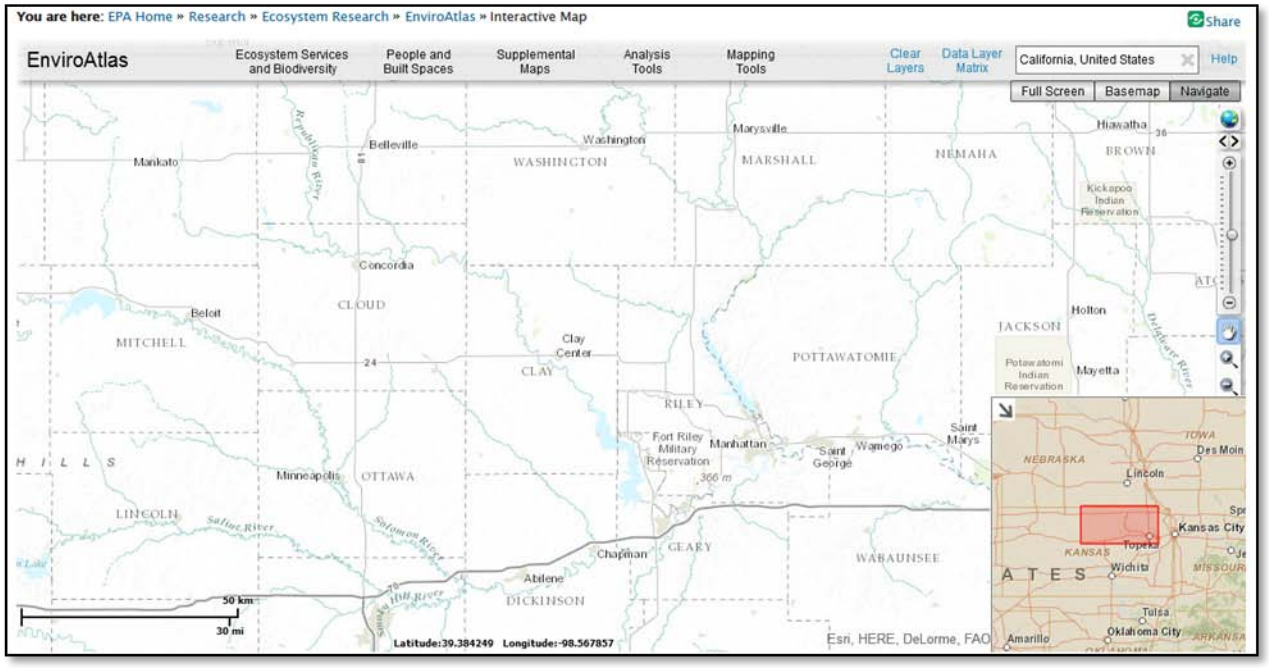
- Full Extent – sets the map extent to the conterminous United States.
- Previous Extent – sets the map extent to the previous location and zoom level.
- Next Extent – sets the map extent to the next location and zoom level (active if the previous extent tool has been used).
- Zoom Slider Bar – sets the map extent as circle moves up (zoom in) or down (zoom out) the bar. Also displays the map scale.
- Pan – sets the map extent without changing the zoom level.
- Zoom In Box – zooms in by interactively drawing a box around the area of interest. Click on the tool first, then draw the box on the map.
- Zoom Out Box – zooms out by using the same method as the Zoom In Box.

EnviroAtlas Interactive Map Basic Navigation

Overview Map

The arrow at the bottom-right corner of the interactive map provides access to an overview map. Click the arrow to open the overview map. A red-shaded inset box appears in the overview map showing the geographic extent of the main map. Clicking the arrow on the upper-left side hides the overview map.





Coordinate Tools

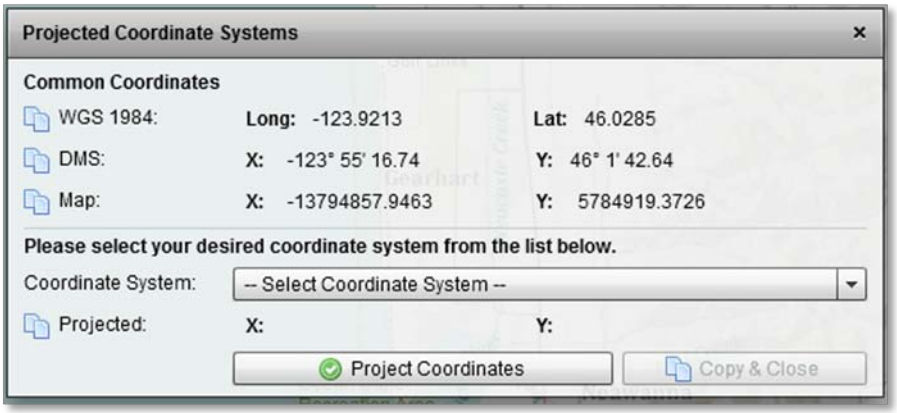
Several options exist for interactively obtaining location coordinates from the map and navigating the map with known location coordinates. These options may be accessed by right-clicking on the map.

Copy Map XY Coordinates To Clipboard – copies the coordinates of the mouse cursor position on the map at the time of the right click to the computer clipboard. The coordinates are reported in the EnviroAtlas native map projection (Web Mercator Auxiliary Sphere, WGS 1984, units in meters). The copied coordinates may be pasted into another computer application.

EnviroAtlas Interactive Map Basic Navigation

Copy Projected XY Coordinates To Clipboard – reports the coordinates of the mouse cursor position on the map at the time of the right click in three coordinate systems in a pop-up window:

- WGS 1984 - Latitude/Longitude in decimal degrees in the WGS 1984 datum.
- DMS - Latitude/Longitude in degrees-minutes-seconds in the WGS 1984 datum.
- Map - Web Mercator Auxiliary Sphere coordinates (in meters) in the WGS 1984 datum.

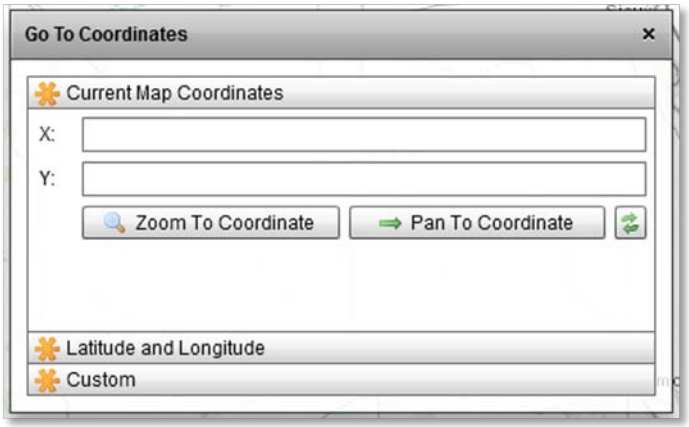


Copy the coordinates to the computer clipboard by clicking the copy icon ( ) to the left of the coordinate system name. Once copied, the coordinates may be pasted into another computer application. Future versions of the EnviroAtlas interactive map will contain additional projected coordinate systems which may be selected from the **Coordinate System** dropdown.

Go To XY Coordinates – navigates to a location on the interactive map based on coordinate input. The three options for coordinate input are:

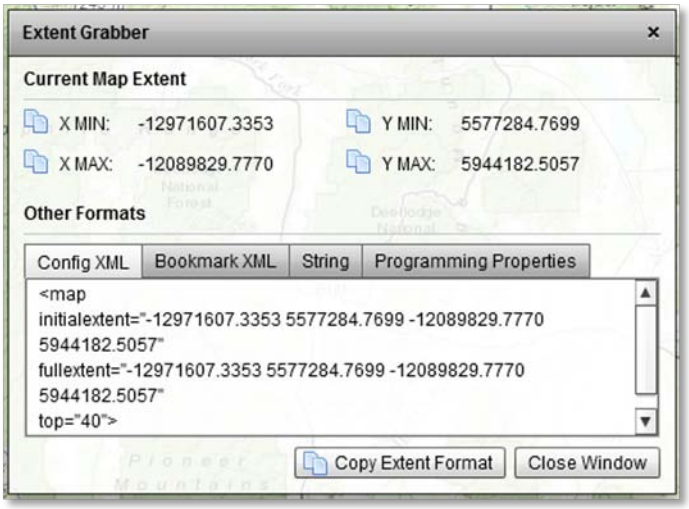
- Current Map Coordinates – input coordinates must be in the EnvioAtlas native coordinate system (Web Mercator Auxiliary Sphere, WGS 1984 datum, units in meters).
- Latitude and Longitude – input coordinates must be in decimal degrees. This input assumes the coordinate datum is WGS 1984.
- Custom – future versions of the EnviroAtlas Interactive Map will allow for input of coordinates collected in coordinate systems other than Web Mercator and Latitude/Longitude.

After entering the X and Y coordinate values, press either **Zoom To Coordinate** to zoom the Interactive Map to a larger scale centered on the coordinate location, or **Pan To Coordinate** to pan the Interactive Map so that it is centered on the coordinate location without changing the zoom level.



EnviroAtlas Interactive Map Basic Navigation

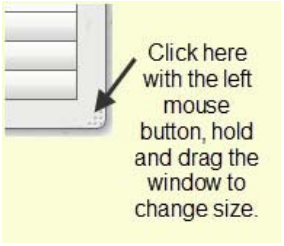
Get Map Extent – opens the Extent Grabber pop-up window which reports the minimum and maximum X and Y coordinates of the map as currently displayed. The coordinates are displayed in the EnvioAtlas native coordinate system (Web Mercator Auxiliary Sphere, WGS 1984 datum, meters).



Extent is reported in four different formats which can be reused for other mapping applications: Config XML, Bookmark XML, String, and Programming Properties. For simple text of the current map extent (x min, y min, x max, and y max) select the String tab. Select the desired format and click **Copy Extent Format** to copy the format to the computer clipboard.

EnviroAtlas Layers and Other Map Layers

The links for Ecosystem Services and Biodiversity, People and Built Spaces, and Supplemental Maps each provide a pop-up window with a selection of layers to display in the interactive map. This pop-up is referred to as the Table of Contents (TOC). To move the TOC or other pop-up windows tools in EnviroAtlas, click and drag the title bar. To resize, click and drag the lower right corner of the pop-up.

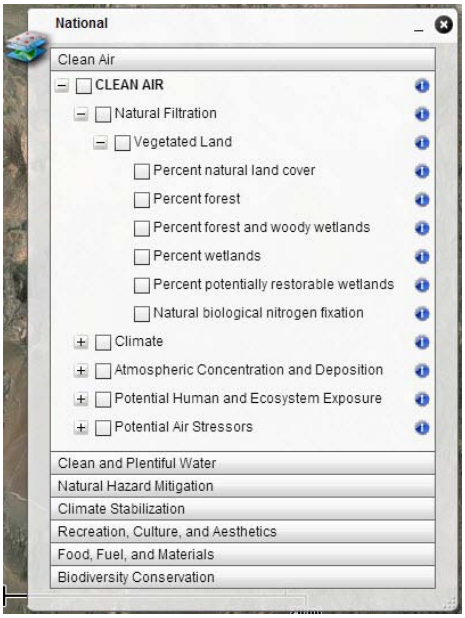


How to Interact With Map Table of Contents (TOC)

Within each TOC pop-up, layers are arranged by category. For example, the Ecosystem Services and Biodiversity – National layers are arranged in seven categories:

1. Clean Air
2. Clean and Plentiful Water
3. Natural Hazard Mitigation
4. Climate Stabilization
5. Recreation, Culture, and Aesthetics
6. Food, Fuel, and Materials
7. Biodiversity Conservation

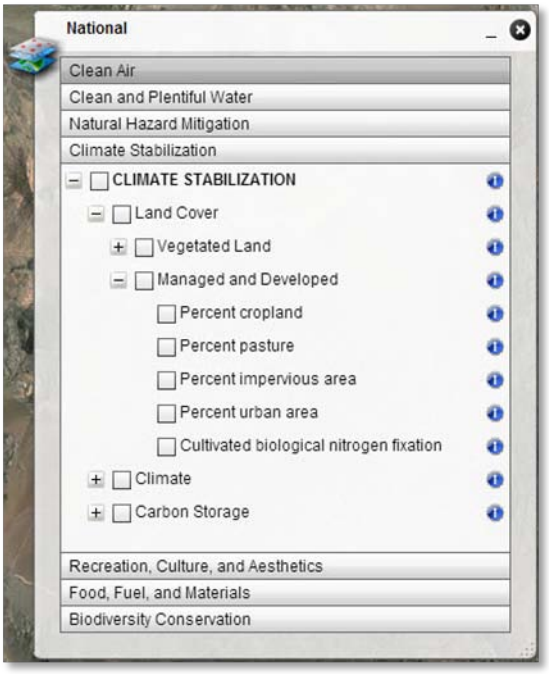
Click on a category name to reveal a list of map layers that belong to that category. In the example at right, the Clean Air category displays a subset of Clean Air map layers.



EnviroAtlas Interactive Map Basic Navigation

Three main user actions are associated with the named items in each TOC: the plus (and minus) sign, the checkbox, and the blue circular "i" icon.

The **plus sign** ("+") to the left of the text indicates that individual layers are collapsed into the category to save space in the TOC and to provide thematic grouping. Many of the categories contain additional levels of subcategories which further refine the layer(s) within the overall category. Once clicked, the plus sign becomes a minus sign and reveals the subcategory or theme names or individual layers in the category. To view the available layer names, click the plus signs where they appear to expand the TOC. The example at the right shows that the Climate Stabilization category is comprised of three subcategories (Land Cover, Climate, and Carbon Storage), the Land Cover subcategory contains two additional subcategories (Vegetated Land or Managed and Developed), and the Managed and Developed subcategory includes five EnviroAtlas layers.



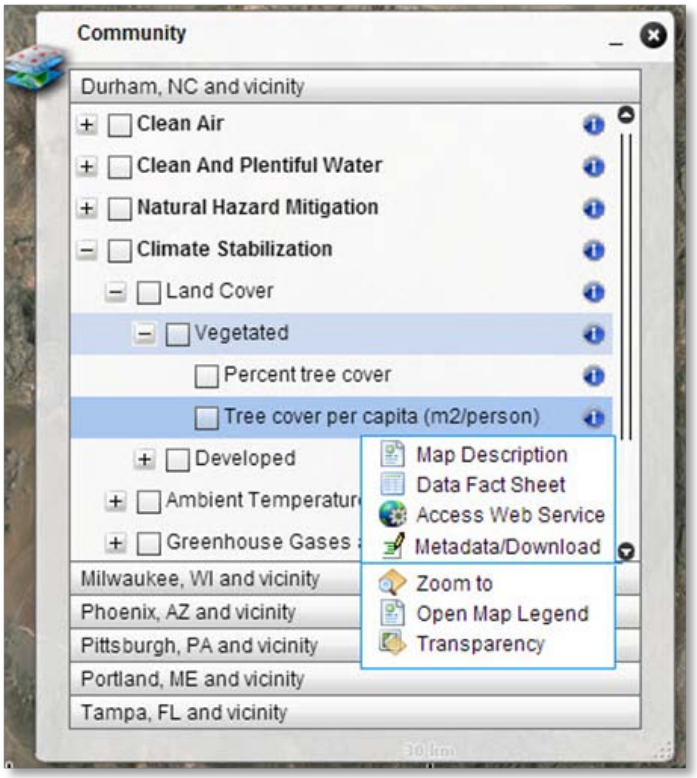
When expanded beyond the size of the TOC window, the TOC displays a scroll bar to view the list of additional subcategories and layers. Use the scroll bar or scroll arrows to view all available choices, or change the window size by clicking and dragging the lower-right corner of the pop-up. Clicking on the **minus sign** ("-") returns the TOC to the collapsed state for the selected category or subcategory.

The **checkbox** controls whether the layer is displayed in the interactive map. Click the checkbox to display a layer on the map. The upper level theme, subcategory and category checkboxes will be checked on automatically. Multiple layers may be selected simultaneously, but only the top layer will be visible on the map.

When a layer is displayed, the associated Map Legend pop-up window displays automatically. Legend and map display is delayed slightly when first loading the layer. This is normal behavior. Legends for each displayed layer appear in the pop-up. Use the scroll bar or scroll arrows on the right of the pop-up, or click and drag to resize the legend pop-up to view more information. To minimize any pop-up window, click the "_" in the upper right corner of the pop-up. To open the minimized pop-up, click on the icon on the left side of the minimized pop-up (example shown for National TOC). To dismiss the TOC or other pop-ups, click the "X" in the upper right corner.

EnviroAtlas Interactive Map Basic Navigation

The **blue circular** "i" **icon** to the right of the category or layer name indicates that supporting information is available for the layer or category. Click the icon to reveal these choices:



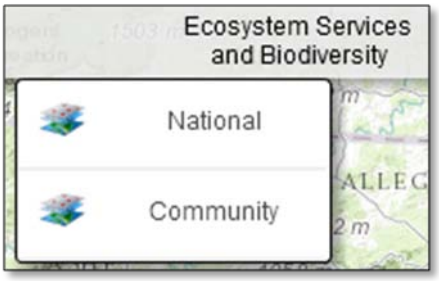
- Map Description – provides a short description of the layer or category.
- Data Fact Sheet – displays the EnviroAtlas Fact Sheet for the layer in a new window.
- Access Web Service – opens a new browser window showing the layer's web service REST page.
- Metadata/Download – displays the EPA Environmental Dataset Gateway (EDG) metadata published for the layer.
- Zoom to - sets the map to the full extent of the category.
- Open Map Legend – displays a separate pop-up window with a map legend if the legend is not already open.
- Transparency – provides a slider bar used to set transparency for the layer or category.

Click the blue circular icon again to dismiss the choices.

EnviroAtlas Interactive Map Basic Navigation

Ecosystem Services and Biodiversity Layers

The **Ecosystem Services and Biodiversity** link provides layer choices developed for the National and selected Community geographic extents. After selecting the geographic extent of interest, the TOC pop-up window will appear with layer choices.

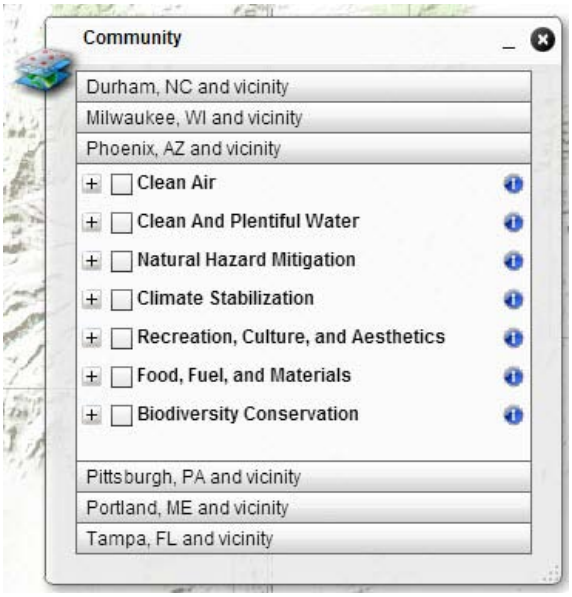


The geographic extent of the national layers includes the conterminous 48 United States. EPA and EnviroAtlas partners have developed these layers to help governments, researchers, and other interested parties understand the status and impacts of Ecosystem Services within a watershed or region. As shown earlier, national layers are arranged in seven categories:

1. Clean Air
2. Clean and Plentiful Water
3. Natural Hazard Mitigation
4. Climate Stabilization
5. Recreation, Culture, and Aesthetics
6. Food, Fuel, and Materials
7. Biodiversity Conservation

Most of the national layers available in the interactive map through the Ecosystem Services link are summarized by 12-digit hydrological unit code (HUC).

New community data are continually created. The current version of EnviroAtlas contains data for six communities: Durham, NC; Milwaukee, WI; Phoenix, AZ; Pittsburgh, PA; Portland, ME; and Tampa, FL. Layers are arranged by community, and are organized in the same categories as the national layers. The community-level layers are designed to be used in conjunction with the national-scale layers. Each community includes layers that have been summarized by US Census Bureau block group. The defined boundaries for the community are based on selected block groups within the 2010 US Census Bureau Urban Area boundary for the community.

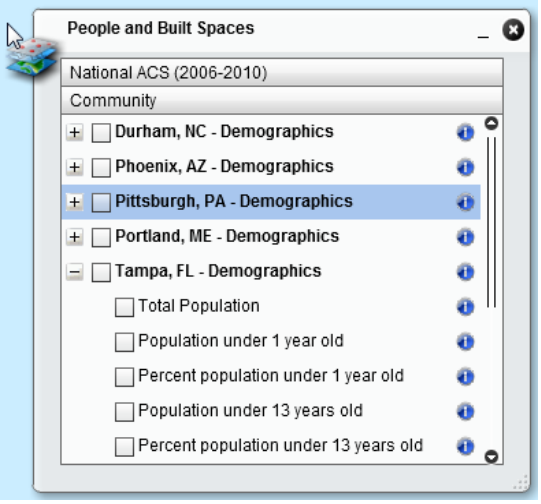


EnviroAtlas Interactive Map Basic Navigation

People and Built Spaces Layers

The **People and Built Spaces** link contains layers associated with demographics and built environments. Demographic layers make up the majority of these datasets. They are displayed as National census tract level polygon data and Community census block group point (centroid) data.

The National American Community Survey (ACS) category includes layers with information about population (race, poverty, age, and education) and housing units for the entire US by census tract from 2010.

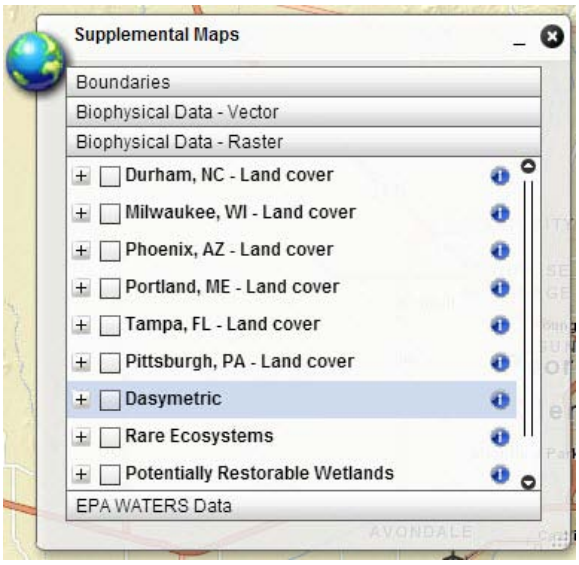


Community-level demographics layers are available for Durham, NC, Phoenix, AZ, Pittsburgh, PA, Portland, ME, and Tampa, FL and are being mapped for the other communities. The layers display information about populations that are vulnerable to detrimental impacts to the environment due to age or economic disadvantage. Also, information relating to schools and day care facilities are included.

Supplemental Maps Layers

The **Supplemental Maps** link contains layers that provide context and additional information for exploring Ecosystem Services along with natural and human-altered landscape features. Supplemental Maps layers are divided into:

1. Boundaries
2. Biophysical Data –Vector
3. Biophysical Data – Raster
4. Environmental Protection Agency Watershed Assessment, Tracking, and Environmental Results (EPA WATERS) Data



A wide variety of layers including rivers, wetlands, political and other boundaries, USGS Gap Analysis Program (GAP) data, EPA Ecoregions, high-resolution landcover data for communities, impaired stream reaches, etc. are included in this TOC. Unlike most other layers, these layers are mapped with unique boundaries and may not be organized by HUC or Census Bureau boundaries. More information about each layer may be accessed by clicking the blue circular "i" icon and selecting the Data Fact Sheet link.

Analysis Tools

The **Analysis Tools** link provides three tools to assist in exploring and analyzing the data:

1. Analyze Ecosystem Services
2. Raindrop Tool
3. Elevation Data

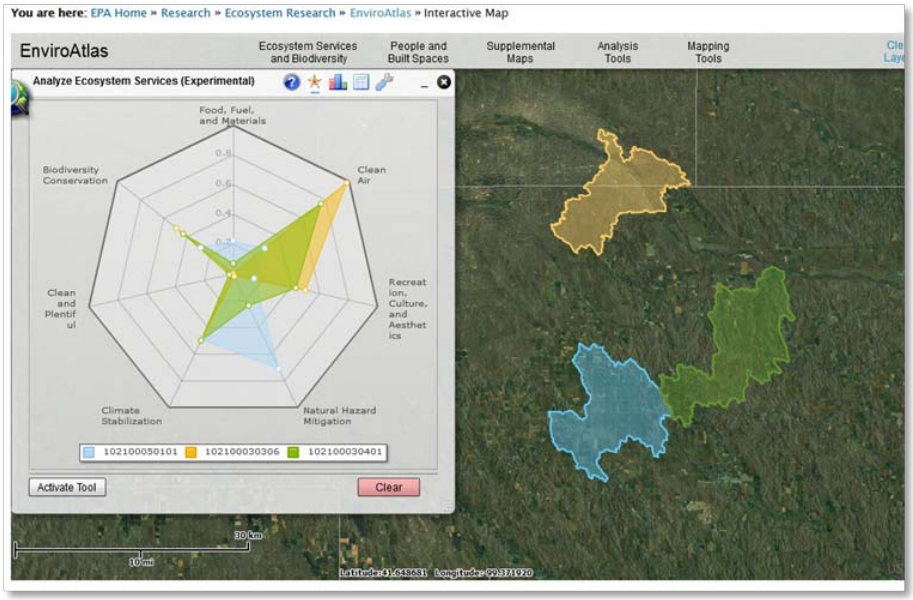
NOTE: Some of these tools are still under development and are for demonstration purposes only. The tools and data are provided as an example of the tool functionality.

Analyze Ecosystem Services Tool

Analyze Ecosystem Services is an interactive mapping tool that displays index values for the seven ecosystem services within a selected 12-digit HUC. The index values for each ecosystem service, which range from 0 to 1.5, represent the degree to which certain ecosystem attributes within the HUC, when analyzed together, are able to mitigate stressors and maximize human health benefits. Separate index values are displayed for each ecosystem services category in graphical and tabular formats.

To use the Analyze Ecosystem Services tool, open the tool and click the **Activate Tool** button to enable HUC selection. Move the mouse pointer ( ) over the location of interest on the map and click.

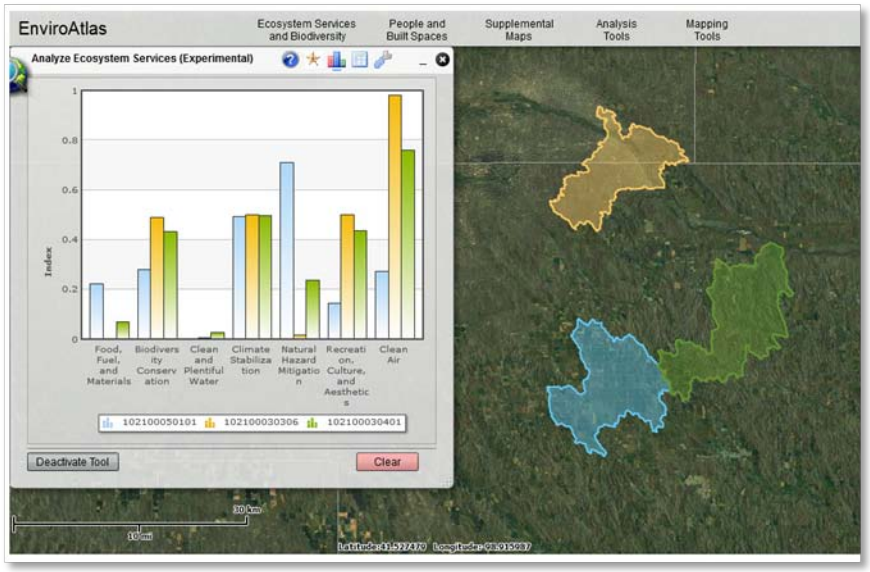
The Analyze Ecosystem Services tool displays the selected HUC in the map along with a pop-up window. The pop-up initially shows a radar chart depicting the index value for each of the ecosystem services along the seven spokes of the chart.



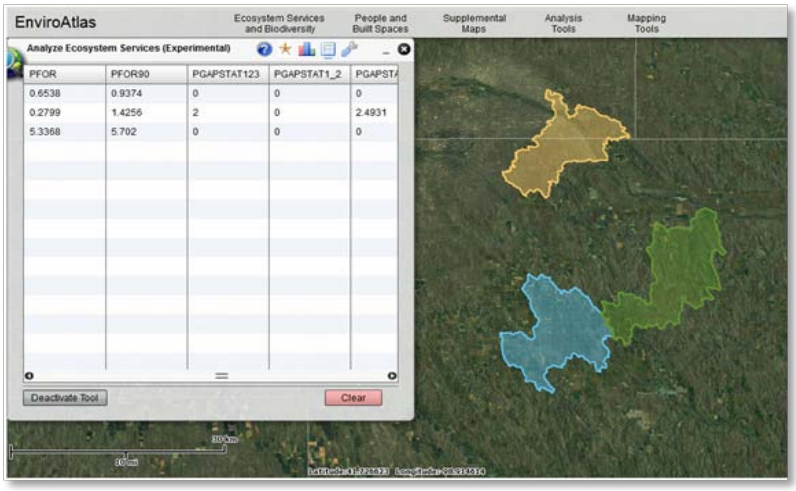
EnviroAtlas Interactive Map Basic Navigation

In the example above for HUC 102100030306 and 102100030401, the index value is lowest for the Food, Fuel, and Materials and the Clean and Plentiful Water ecosystem services categories. When data is completed for this tool, the values would indicate ecosystem attributes that are known to provide human benefits in the Food, Fuel, and Materials and Clean and Plentiful Water categories are lacking while the highest index value is the Clean Air ecosystem services category. HUC 102100050101 is comprised of ecosystem attributes showing higher index values for the Natural Hazard Mitigation ecosystem services category.

There are alternate ways to view the index values for the selected HUC. Click the bar chart icon ( ) to view the values as a series of bar charts. Click the table icon ( ) to view the values in a table.



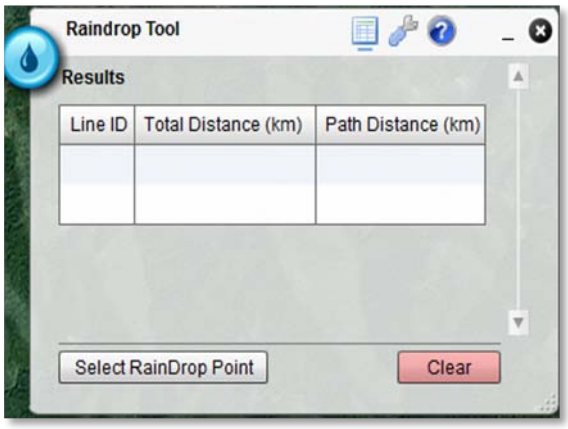
Multiple HUCs may be displayed simultaneously to facilitate comparison. While only 12 distinct color HUCs will be displayed on the map, the graphs can display additional HUCs. The ability to discern the graph and associated HUCs may become difficult with more than 12 HUCs. Select another location on the map to display another HUC. The radar graph for the each newly-selected HUC is superimposed on the previous graph. Click the bar chart icon to display the index values for the HUCs as bars side by side. To toggle any graph on or off, simply click the legend item for the HUC below the graph.



Select the table icon to display a table with the values for the individual ecosystem attributes that are used to calculate the index for each ecosystem service.

Raindrop Tool

The Raindrop Tool generates a raindrop flow path (linear feature) based on the interactive selection of a location and returns the distance to the nearest water feature as depicted in National Hydrography Dataset Plus (NHDPlus). The tool pop-up window includes three icons at the top: Results ( ), Settings ( ), and Help ( ).

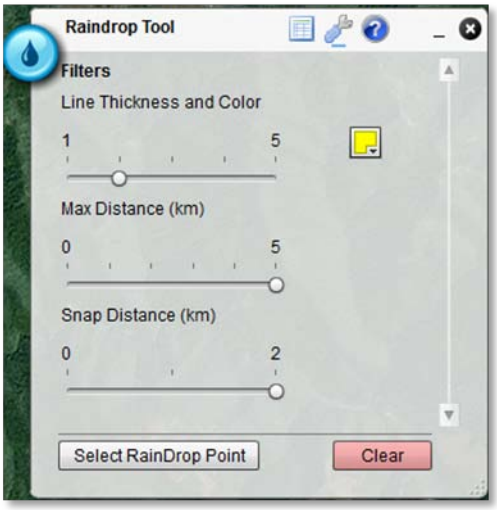


NOTE: It may be helpful to display the NHD Flowlines layer while using this tool to provide context. The NHD Flowlines layer is in the Supplemental Maps link, within the Biophysical Data – Vector category.

To use the Raindrop Tool with default settings, simply click the **Select Raindrop Point** button, move the mouse pointer ( ) over the location of interest on the map and click. The tool returns a line showing the flow path of water from the point selected to the nearest water body. The map zooms to the scale and location where the flow path line is returned.

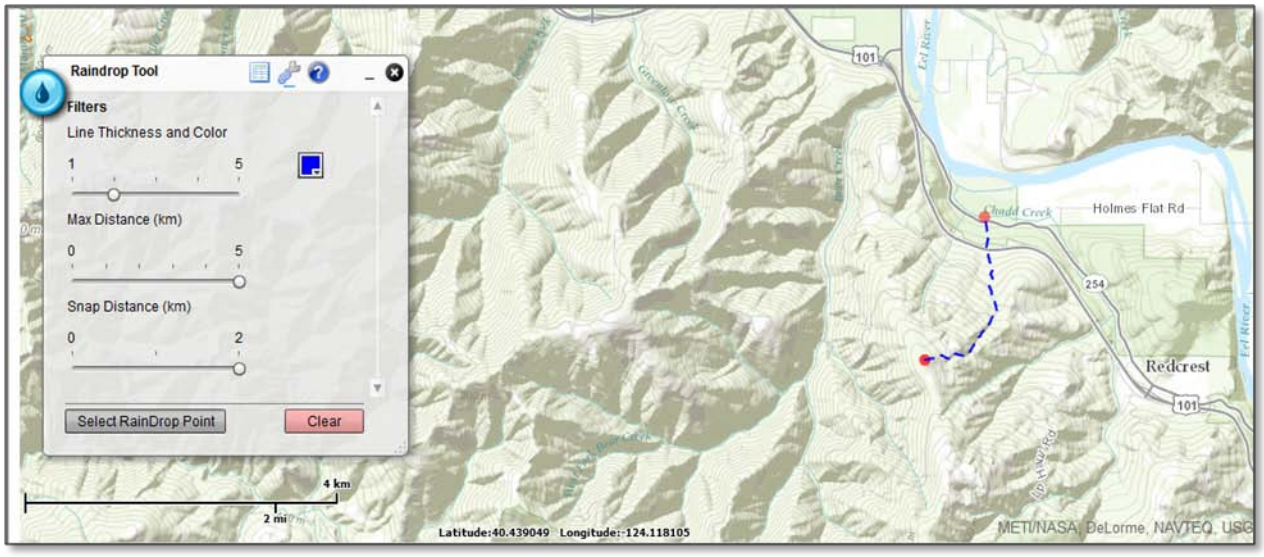
The Raindrop Tool provides settings which may be adjusted if the default settings do not provide the desired results. Click on the Settings icon ( ) to access these:

- **Line Thickness and Color:** Use the slider bar to set the line thickness. Click the color box to select the line color. The default is a 2-point yellow line.
- **Max Distance (km):** Use the slider bar to set the maximum distance the raindrop will travel, from 0 to 5 kilometers. The default is 5 kilometers.
- **Snap Distance (km):** Use the slider bar to set the distance the raindrop will travel before snapping to the nearest NHDPlus water feature. The default is 2 kilometers.



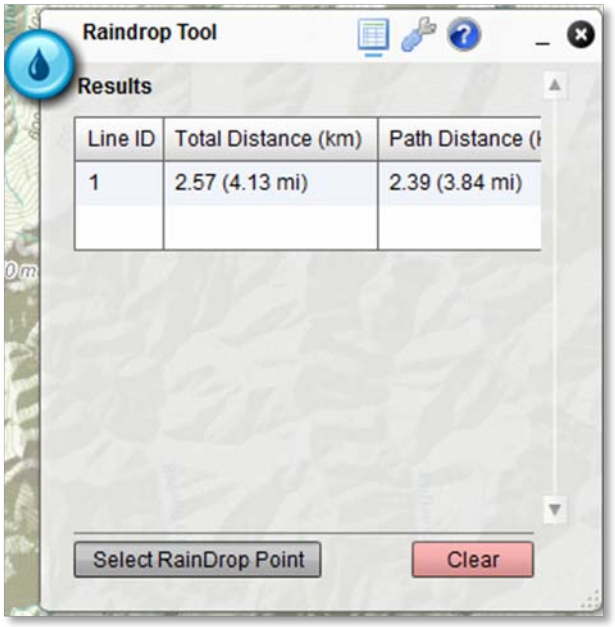
EnviroAtlas Interactive Map Basic Navigation

Once the filters are set (or if the defaults are acceptable), click the **Select Raindrop Point** button. Move the mouse pointer ( ) over the location of interest on the map and click. If the Max Distance and Snap Distance criteria are met, the flowline displays on the map with red circles indicating the starting point (darker red at the selected point) and ending point (lighter red at the NHDPlus water feature).



Click the **Results** icon ( ) to find the total and path distance values from the selected point to the nearest NHDPlus water body. Several points may be selected and flowlines displayed on the map simultaneously, however only the last raindrop point is reported in the Results table. To remove the graphic features from the map, click the red "Clear" button.

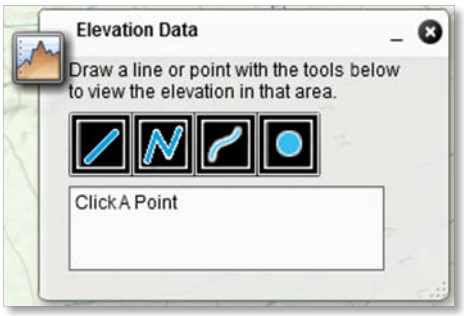
NOTE: Raindrop points can continue to be selected while the mouse pointer shows the magnifying glass. To return to EnviroAtlas map functions, close the Raindrop tool or click on the ***Select Raindrop Point*** *button to leave the tool open. The mouse pointer reverts to an arrow.*



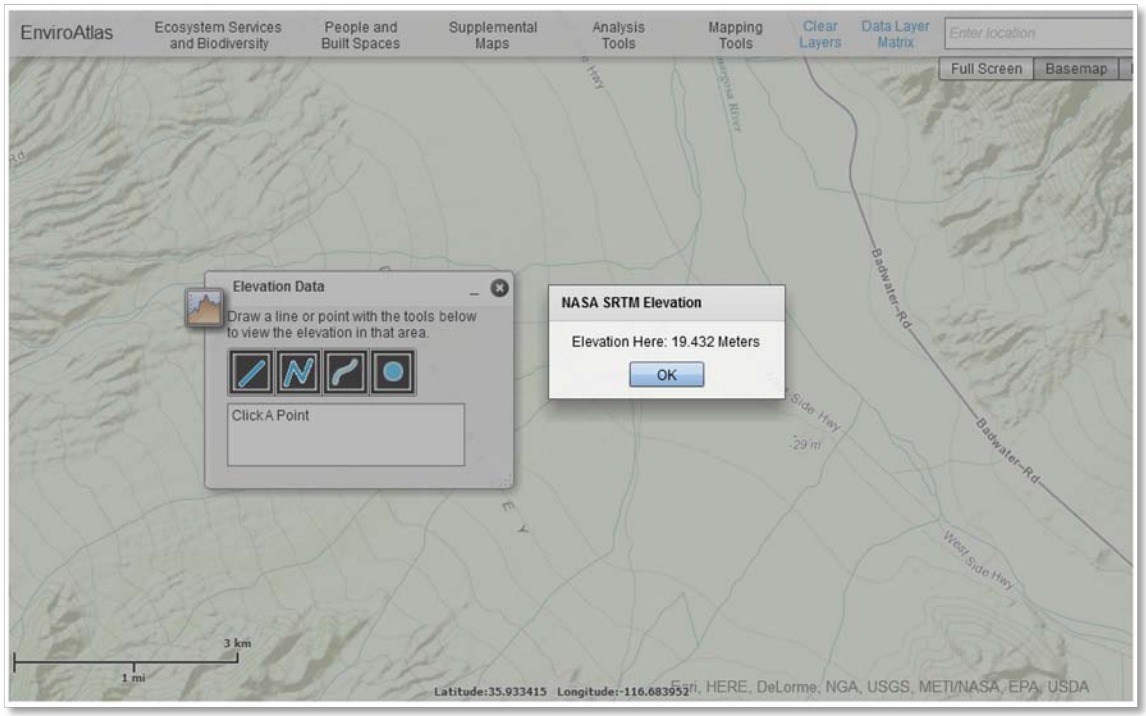
EnviroAtlas Interactive Map Basic Navigation

Elevation Data Tool

The Elevation Data tool provides the elevation at a selected point on the map or generates an elevation profile graph based on an interactively-drawn line. The elevation data are reported in meters above mean sea level and are based on topographic data collected by the NASA Shuttle Radar Topography Mission (SRTM).



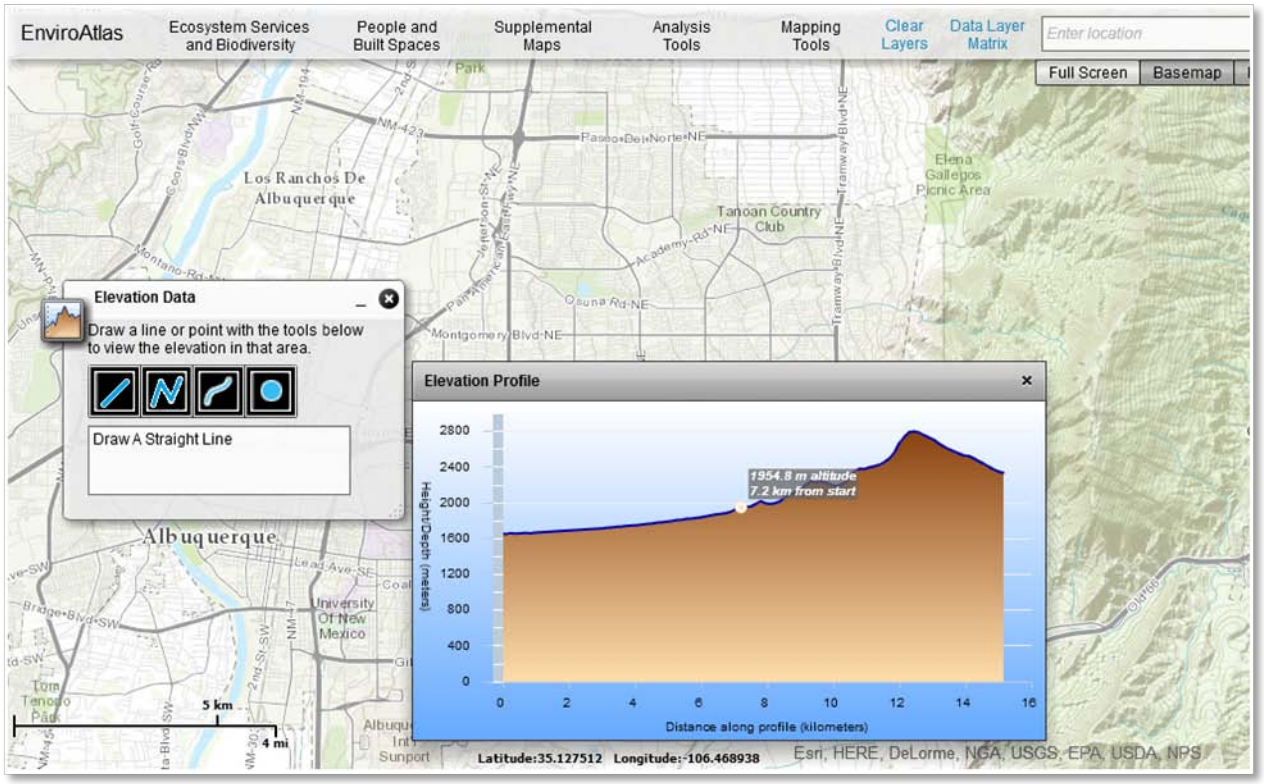
To obtain an elevation value at a point on the map, select the point icon ( ) then click on the map location. A pop-up window displays the elevation at the point.



Three methods are available to generate an elevation profile graph:

- Draw A Straight Line ( ) – draw a single straight line along the desired profile transect by clicking and holding the mouse button at the beginning point of the profile, then releasing the mouse button at the end point of the profile.
- Draw A Polyline ( ) – starting with a single click at the desired beginning point of the profile transect, draw a single line consisting of a series of straight lines connected with mouse clicks. Double click at the end point of the profile.
- Draw A Freehand Line ( ) – draw a single line (which may contain curves) along the desired profile transect by clicking and holding the mouse button at the beginning of the profile, then releasing the mouse button at the end point of the profile.

The elevation profile graph displays in a pop-up window. Hover the mouse pointer over the profile line to see the distance along the profile and the elevation value at a particular point.



Additional EnviroAtlas Notes

For additional comments or information about EnviroAtlas, please see the EnviroAtlas home page.

EnviroAtlas currently requires Adobe Flash® to display the Interactive Map. Certain devices such as mobile phone or tablets may need additional software installed to run Flash web pages. EnviroAtlas may be best viewed in a desktop or laptop browser window (for example Internet Explorer, Google Chome, FireFox, or Safari).